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## NOTICE OF ALLOWANCE AND FEE(S) DUE

23117 7590 09/17/2009

NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER

CHOI, LING SU

ART UNIT

PAPER NUMBER

1796

DATE MAILED: 09/17/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,920	01/25/2006	Sanjay E. Rastogi	BHD-5256-6	2936

TITLE OF INVENTION: PROCESS FOR THE PREPARATION OF A SHAPED PART OF AN ULTRA HIGH MOLECULAR WEIGHT  
POLYETHYLENE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/17/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issued on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to:** **Mail** **Mail Stop ISSUE FEE**  
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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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23117 7590 09/17/2009

NIXON & VANDERHYE, PC  
 901 NORTH GLEBE ROAD, 11TH FLOOR  
 ARLINGTON, VA 22203

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,920 01/25/2006

Sanjay E. Rastogi

BHD-5256-6

2936

**TITLE OF INVENTION:** PROCESS FOR THE PREPARATION OF A SHAPED PART OF AN ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE

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nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/17/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHOI, LING SIU	1796	526-352000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_  
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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23117	7590	09/17/2009	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			CHOI, LING SIU	
			ART UNIT	PAPER NUMBER

1796

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## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

# Notice of Allowability

## Application No.

10/561,920

## Examiner

Ling-Siu Choi

## Applicant(s)

RASTOGI ET AL.

## Art Unit

1796

### - The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/11/2009.
2. ☒ The allowed claim(s) is/are 1-11 and 15-22.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

/Ling-Siu Choi/  
Primary Examiner, Art Unit 1796

**DETAILED ACTION**

1. The request filed on 08/11/2009 for a request for continued examination (RCE) under 37 CFR 1.114 based on parent Application No. 10/561,920 is acceptable and a RCE has been established. An action on the RCE follows.
2. This Office Action is in response to the Amendment filed 08/11/2009. Claims 12-14 were cancelled and claims 15-22 have been added. Claims 1-11 and 15-22 are now pending.

***Examiner's Amendment***

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Bryan H. Davidson on September 01 and 11, 2009.

4. The application has been amended as follows:  
On page 3 of Specification, between line 14 and line 15 , insert a paragraph as follows,

**--BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is the results of the G\*-measurements of the UHMWPE (determined at a heating rate  $\Theta$  of 20 K/minute). --

Page 8, line 16-17, **delete** --The results of the G\*-measurements are given in Figure I at page 12 (determined at a heating rate  $\Theta$  of 20 K/minute). --

Claim 1, lines 5-6, change "at least  $1 \times 10^6$  g/mol" to --at least  $1 \times 10^6$  g/mol--;

Claim 15, line 5, change "at least  $1 \times 10^6$  g/mol" to --at least  $1 \times 10^6$  g/mol--;

Claim 15, line 9, change "at a a a" to --at a--.

***Allowable Subject Matter***

5. Claims 1-11 and 15-22 are allowed.
6. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Burstein et al. (US 5,721,334) and Rastogi et al. (US 6,433,120 B1).

Summary of claim 1:

Process for the preparation of a shaped part of an ultrahigh molecular weight polyethylene (UHMWPE) by	
	heating the UHMWPE to a temperature above the melting temperature,
	shaping the resulting melt, and
	cooling the melt to a temperature below the melting temperature,

	wherein
A	the UHMWPE has a weight average molecular weight ( $M_w$ ) $\geq 1 \times 10^6$ g/mol
B	during the shaping <u>the storage Plateau modulus (<math>G^*</math>) of the UHMWPE <math>\leq 1.5</math> MPa</u>
C	whereafter, before the cooling, the $G^*$ is raised to its final value

Summary of claim 15:

Process for the production of a shaped part of an ultrahigh molecular weight polyethylene (UHMWPE) comprising the steps of:	
A	heating at a heating rate ( $\Theta$ ) which is at most 1 K/minute an ultrahigh h molecular weight polyethylene (UHMWPE) having a weight average molecular weight ( $M_w$ ) of at least $1 \times 10^6$ g/mol and having an initial storage plateau modulus ( $G^*$ ) value of at most 0.75 MPa to a temperature above the melting temperature of the UHMWPE to form a processable melt thereof;
B	allowing the initial $G^*$ value of the UHMWPE melt to build at a speed ( $\psi$ ) of less than 3 MPa/hour to a processing <u><math>G^*</math> value of at most 1.5 MPa</u> ;
C	shaping the melt of the UHMWPE while <u>maintaining the processing <math>G^*</math> value of at most 1.5 MPa</u> to form a shaped part thereof; and thereafter
D	prior to cooling, raising the $G^*$ value of the shaped part formed according to step (C) from a $G^*$ value of at most 1.5 MPa to a final $G^*$ value of about 2.0 MPa; and
E	cooling the shaped part.

Burstein et al. disclose a process to prepare a shaped article of ultra high molecular weight polyethylene (UHMWPE) having an average molecular weight of between about 1 million and about 10 million, the process comprising (A) filling a mold with powdered UHMWPE and covering the mold with a piston, (B) raising the temperature of the mold and its contents to between about 140 and about 225°C, while

simultaneously applying a pressure of between about 2.5 and about 15 MPa to the mold, (C) then dropping the temperature of the molded part at a rate between about 4 and about 175°C/minute(abstract). It is noted that 415 GUR resin (Hoechst Celanese) is used, wherein the 415 GUR is an entangled instead of disentangled UHMWPE, resulting in excess of 1.5 MPa for  $G^*$  value. Thus, Burstein et al. do not teach or fairly suggest the claimed process, wherein the process comprising, in particular, the steps of (A) during the shaping the storage Plateau modulus ( $G^*$ ) of the UHMWPE  $\leq 1.5$  and (B) before the cooling, the  $G^*$  is raised to its final value.

Rastogi et al. disclose a method to process ultra-high molecular weight polyethylene (UHMWPE) having a molecular weight ( $M_w$ ) of at least 400,000, the method comprising (A) heating under elevated pressure, (B) continuing the heating of the resulting UHMWPE under an elevated pressure to at least the melting temperature of the UHMWPE, (C) cooling the resulting melted UHMWPE product to ambient temperature, and (D) removing the cooled product from the pressure cell, wherein the speed of heating is 0.5-5°C/min (claims 1 and 13). It is noted that Hostalen GUR 4130 resin is used, wherein the GUR 4130 resin is an entangled instead of disentangled UHMWPE, resulting in excess of 1.5 MPa for  $G^*$  value. Thus, Rastogi et al. do not teach or fairly suggest the claimed process, wherein the process comprising, in particular, the steps of (A) during the shaping the storage Plateau modulus ( $G^*$ ) of the UHMWPE  $\leq 1.5$  and (B) before the cooling, the  $G^*$  is raised to its final value.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.



Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114.

/Ling-Siu Choi/

Primary Examiner, Art Unit 1796

September 09, 2009

Application/Control Number: 10/561,920  
Art Unit: 1796

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